

Publication 2: Japanese Publication of Patent Application for PCT No. Hei 8-508617
"Method and Apparatus for Encoding/Decoding Broadcast or
Recorded Segments and Monitoring Audience Exposure Thereto"

[Abstract]

Methods and apparatus for encoding and decoding information in broadcast or recorded segment signals are described. In certain embodiment, an audience monitoring system encodes identification information $x(w)$ in the audio signal portion of a broadcast or recorded segment using spread spectrum encoding (100). A personal monitoring device (200) receives an acoustically reproduced version of the broadcast or recorded signal via a microphone (230), decodes the identification information from the audio signal portion despite significant ambient noise and stores (260) this information, automatically providing a diary for the audience member which is later uploaded to a centralized facility. A separate monitoring device (700) decodes additional information from the broadcast signal, which is matched with the audience diary information at the central facility. This monitor (700) may simultaneously send data to the centralized facility using a dial-up telephone line, and receive data from the centralized facility through a signal encoded using a spread spectrum technique and modulated with a broadcast signal from a third-party.

(from the Background of the Invention section)

Such passive recording methods would be characterized by the presence of a device which attempts to sense, in real time, the broadcast segments to which an audience member is exposed and record this information, which would later be retrieved at or uploaded to a centralized data processing facility. Since the information would be collected in computer readable form, data processing could be carried out readily with the use of a passive recording apparatus. Information collected by passive recording would be free of human error, and in this respect would enjoy improved reliability.

Devices known as "personal passive people meters", which are small and portable, have been proposed. Such devices are intended to be carried by persons whose broadcast segment exposure would be monitored. These meters would permit viewer/listener determination at the individual level, which is highly desirable.

A major problem in passive recording is to correctly sense the segment to which a viewer is being exposed. The proposed approaches involve attempting to identify both

unmodified broadcast segments, and segments modified before broadcast to make them more readily identifiable.

One approach to identification of unmodified segments involves pattern recognition. Each segment is analyzed before or after broadcast and its analyzed characteristics determine its "broadcast signature". A table of broadcast signatures is created by, or made available to, each monitoring station. In operation, a monitoring station attempts to analyze the characteristics of a segment being broadcast and match it to one of the broadcast signatures, that is, recognize its pattern. This approach uses relatively complicated technology and is cumbersome to implement due to the need to enable each monitoring station to recognize new segments as they are introduced.

OBJECTS AND SUMMARY OF THE INVENTION

Objects of the present invention include the following:

- to provide information concerning broadcast or recorded segments to which audience members have been exposed;
- to provide information concerning the broadcast or recorded segments to which audience members have been exposed despite the presence of significant ambient noise;
- to provide methods and apparatus for encoding audio signals in which the codes are imperceptible as information to audience members;
- to detect which segments were actually broadcast in a given time period;
- to provide media exposure records for audience members to a centralized facility;
- to receive information from a centralized facility via an encoded transmission hidden within a preexisting transmission channel.

(snip two paragraphs)

In some applications, the receiving and correlating is carried out by a personal unit worn or carried on the person of an audience member, that produces a record of the broadcast or recorded segments to which the audience member has been exposed. This record, with identification of the audience member, is uploaded to a centralized facility.

A separate monitoring unit performs receiving and correlating in like manner as the personal units and may also extract additional information contained in the broadcast or recorded segment to produce a full record of what was broadcast. This monitoring unit communicates with the centralized facility to upload information thereto.

(from the Detailed Description of Certain Advantageous Embodiments section)

As shown in Fig. 2A, the encoded audio portion of the broadcast segment is received at an input terminal 205 of a typical broadcast receiver 210, which acoustically reproduces the audio portion using a speaker 220. Receiver 210 and its speaker 220 represent devices normally used in households and elsewhere by audience members to acoustically reproduce broadcast audio signals. Alternatively, a recorded segment containing an encoded audio portion may be reproduced, such as by a video cassette recorder, and the audio portion thereof acoustically reproduced by a speaker such as speaker 220.

The acoustically reproduced audio portion of the broadcast or recorded segment is received by the microphone 230 of the personal monitor 200, which transduces the acoustic energy into an electrical signal.

(Refer to attached Fig. 2A of USP 5,579,124, which corresponds to Fig. 2A of this PCT publication)

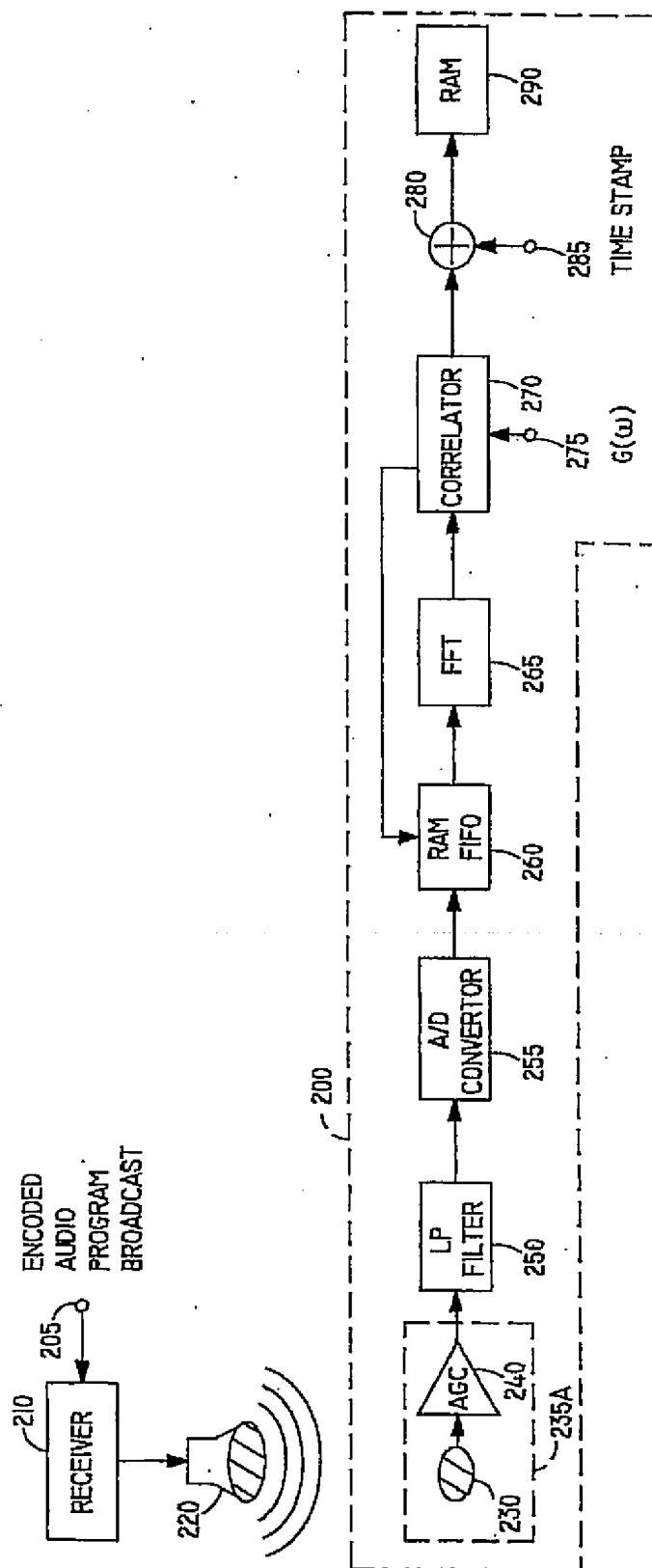


FIG. 2A